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ON A SMALL COLLECTION OF LICHENS FROM JAMAICA, WEST INDIES

R. Heber Howe, Jr.

In April, 1909, at the request of Dr. Duncan S. Johnson, of Johns Hopkins University, the New York Botanical Garden forwarded to me a small collection of lichens collected by him on the island of Jamaica in 1903 and 1906.

At the time I worked over and prepared this list, I was unable to find any recently published list[1] of the lichen flora of Jamaica, but the publication of Dr. L. W. Riddle's list[2] has led me to publish this enumeration. For the advantage of comparison, this list follows Dr. Riddle's arrangement.

Two specimens of the genus *Cladonia* were sent to Prof. Bruce Fink for determination: and the crustose species to Dr. H. E. Hasse; the genus *Stereocaulon* was sent to Dr. Riddle who has also determined several other specimens. Acknowledgment is here most gratefully made.

PYRENOCARPEAE

Pyrenula "Lichen No. 7. Goat Isd. IV–16–06." A composite specimen.

Pyrenula "no spores"; *Porina* sp. (?). Spores "28 × 8 μ."

Anthracothecium Mass. "Lichen No. 4. Goat Isd. IV–16–06." One specimen spores "muriform, pale-brown," Determined by Dr. Hasse. Nos. 1, 6, 8, 11, 31, 32, 37, and 100 and labelled "Lichens" belong in other groups.

CONIOCARPINEAE

Sphaerophorus compressus Ach. "Lichen No. 36. Sir John, V–1–06." One specimen determined by Prof. Fink.

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[1] Swartz, Prod. 1788 and Flora Indiae Occidentalis, 1806.

[2] Riddle, Mycologia, 4: 125–140. 1912.

GRAPHIDINEAE

Arthonia distendens Nyl. "Lichen No. 9 Goat Isd. (near Old Harbor), IV–16–06." The bark of this specimen supports several species, beside the above. Spores "40–60 × 24 μ, oblong and ovoid-oblong, colorless becoming light brown, 6–8 septate (7–9 locular) with several septations in longitudinal axis. Determined by Dr. Hasse. Other species present *Arthonia radiata* (Per.) Th. Fr. "no spores"; *Microglaena* "spores narrowly ellipsoid 23–32 × 10–14,4–7 μ septate and submuriform, decolorate becoming light brown"; *Microthelia* (?) *thelena* (Ach.) Mull. Arg. Spores "oblong-ellipsoid, 15–18 × 5–6 μ; *Thelotrema* (?) *lepadinum* Tuck. Spores "24–52 × 7–16 μ." Determined by Dr. *Graphis* "Lichens No. 5. John Crow Peak, IV–18–03." One specimen, "section *Diplographis*, but no spores seen." Determined by Dr. Hasse.

Chiodecton rubrocinctum Nyl. (= *Ch. sanguineum* (Sw.) Wain.) "Lichen No. 18. Clydesdale, IV–28–06." One specimen determined by Dr. Hasse.

Thelotrema (?) *subtile* Tuck., Determined by Dr. Hasse.

CYCLOCARPINEAE

Ocellularia alba (Feé) Müll. Arg. One specimen determined by Dr. Hasse. Spores "colorless roundish and ovoid-oblong, 3–4 septate."

Baeomyces absolutus Tuck. "Lichen No. 16, near Vinegar Hill (Trees), IV–23–03" and "Lichen 48 on *Eucalyptus* Whitfield Hall Wks. IV–22–03." Two specimens determined by Dr. Hasse No. 48 "contains a *Porina* also."

Cladonia rangiformis Hoffm. "Lichen No. 33, Cladonia sp.? Cinchona Hill, V–2–06." One specimen, determined by Prof. Bruce Fink.

Cladonia rangiformis var. *cubana* Wain. "Lichen No. 45, Blue Mt. Peak, IV–20–03, *Cladonia* sp." One specimen determined by Prof. Fink.

Cladonia didyma var. *rugifera* Wain. "Lichen No. 43, *Cladonia* sp. Clyde Valley, V–8–06." One specimen determined by Prof. Fink.

Cladonia aggregata (Sw.) Ach. "Lichen 34, *Cladonia* sp.? Cinchona Hill, V–20–06." One specimen determined by Prof. Fink.

Cladonia squamosa var. *phyllocoma* Rabenh. "Lichen 44, *Cladonia* sp. Clyde Valley, V–8–06." One specimen determined by Prof. Fink.

Stereocaulon ramulosum (Sw.) Ach. "Lichen No. 13, *Cladonia,* sp. Rd. to Morce's Gap (?)." Specimen determined by Dr. Riddle, of which a part is now in his herbarium.

Stereocaulon cornutum Müll. Arg. "Lichen No. 14, Morce's Gap, 03." One specimen determined by Dr. Riddle.

Leptogium tremelloides (L.f.) Gray. "Lichens No. 2, New Haven Gap, IV–30–03," and "Lichen No. 30, Sir John, V–1–06." Two specimens. Spores 28–32 × 14 μ. Determined by Dr. Riddle.

Leptogium phyllocarpum (Pers.) Nyl. "Lichen No. 19," and "20. Cinchona Hill, IV–28–03." Two specimens. Spores 28–40 × 10–18 μ. Verified by Dr. Riddle.

Leptogium "Lichen No. 3, Morce's Gap, IV–23–03." One sterile fragment is perhaps referable to some form of *chloromelum* (Sw.) Nyl.

Pannaria (*Parmeliella*) *pannosa* (Sw.) Delis. "Lichen No. 38, Portland Gap, IV–16–06," and "Lichen No. 39, Cinchona Hill, IV–28–03." Two sterile specimens. Dr. Riddle refers a part of this material to *P. Mariana* var *isideoidea* Müll. Arg.; a part to *P. rubiginosa* (Thurb.) Del., but in the absence of apothecia it is thought best to refer both to *Pannaria pannosa.*

Coccocarpia pellita (Ach.) Müll. Arg. "Lichen No. 10, Cinchona Hill, IV–25–06 (on soil)." One specimen spores 8 × 16 μ. Verified by Dr. Riddle.

Sticta Weigelli (Ach.) Wain. "Lichen No. 27, Cinchona Hill, IV–03." Determined by Dr. Riddle.

Sticta damaecornis (Sw.) Ach. Nos. 15, 17, 21, 22, 23, 29, 35, 41, and 42. Nos. 29, 35, collected in "V–06," all other in "IV–03," and representing in all the following localities: Blue Mt., Cinchona Hill, New Haven Gap, Latimer River, and Sir John. The specimens exhibit the wide variation in form of thallus location shown by this species. The envelopes in which the specimens came to hand were marked "Lichen," except "No. 29"—labeled "Liverwort." Spores $48 \times 16 \mu$.

Lobaria peltigera (Del.) Wain. "Lichen No. 40, Clyde Valley, IV–27–96." Spores $32–49 \times 14–16 \mu$. Determined by Dr. Riddle.

The Usneas of Jamaica present a very difficult problem because of the mass of described species from tropical and subtropical regions, which have been named with little or no correlated study of distribution. The determinations here made are not considered necessarily final, but are the best elucidation possible under the existing circumstances. Dr. J. A. Cushman of the Boston Society of Natural History has kindly allowed me to study, and here record, notes on the Usneas of a collection recently made by him in Jamaica. All his collecting was done in a different region of the island from that covered by Miss Cummings and Dr. Johnson, and his specimens seem to represent a flora less typically *tropical.*

Dr. Riddle writes me in connection with his determinations: "I was not at all satisfied with my dispositon" of the Usneas. We have since gone over all the material together, and there is very little doubt, as I have said, that the members of this genus from the tropics need a thorough revision.

Usnea [*Eumitria*] *implicata* Strt. "Lichen No. 24," and "25 Cinchona Hill, IV–28–03." Two small fertile specimens—spores normal. Also "Lichen No. 28, Sir John, V–1–96," sterile. Dr. Cushman's material from Newcastle and Mandeville represents this species in part. It is clearly defined by its hollow or arachnoid axis. Superficially it suggests *U. florida* (L.) Web.

Usnea dasypogoides var. *cladoblephara* Müll. Arg. "Lichen No. 26, John Crow, IV–18–93," and "Lichen No. 28, Sir John, V–1–96." This material appears to belong here. The type of this variety however, is not to be found among the Müller types either at Chambésy or at Kew.

The material No. 1*b* determined by Dr. Riddle as *Usnea laevis* (Eschw.) Nyl. is undoubtedly *U. arthroclada* Fée., which appears to be quite synonymous with *U. intercalaris* Wain. non? Kremp., *U. laevigata* Wain., and seemingly even *U. articulata* var. *di-*

morpha Müll. Arg. Nos. 7, 8 and 1*a* are referable to *U. Vrieseana* Mont. & Bosch.,[3] and are all *Pachynae,* as is Mr. Merrill's Lich. Exc. No. 109. No. 1*d* seems referable to *U. denudata* Smith (Rees, Encl. Arts. Sci Lit. **37**: 1817), a naked, subpendulous plant of the *Mesinae* described from Otaheite. Nos. 2 and 6 (in part), as is Mr. Merrill's distribution Lich. Exc. No. 159, are dicroic[4] conditions of *U. ceratina.* One example of No. 6 is a typical *U. angulata* Ach. Dr. Riddle has kindly given me the following notes on *U. jamaicensis* Ach., made by him of the type preserved at Helsingfors. Though not as yet discovered in material examined from Jamaica it seems a fitting place to give its diagnostic characters. "It is a short rather stout plant, apparently erect, 4 cm. long and 1–13 mm. thick,—scabrous with copious, very minute papillae—much branched, but with very few fibrils—apothecia *frequent,* 1.5–3 mm. lat." Dr. Elfvring has also kindly sent me a fibril section which shows it to be a *Mesinae.* Dr. Wainio considered it synonymous with *U. aspera* (Eschw.) Wain.

The material collected by Dr. Cushman, not discussed above, seems to represent the following species. It was collected in March, 1912, at Catadupa (1,200 ft.), Montego Bay (up to 500 ft.), Mandeville (2,000 ft.), and Newcastle (4,000 ft.). In part it represents *U. concinna* Strt., and *U. radiata* Strt., both *Pachynae;* in part *U.* [*Eumitria*] *implicita* Strt. as mentioned above. The pendulous species are *U. angulata* Ach., not entirely typical, and a terete, robust species suggesting *U. longissima* Ach., but having a curious brown axis, and probably *U. mekista* Strt. One example of this material having the brown axis I am unable to name, and yet entirely unwilling, under the circumstances, to describe as new.

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[3] Since this paper was written, Dr. Yongman of Leiden has sent me for examination a part of the type of *U. Vrieseana.* It proves to be, instead of a *Pachynae,* as designated by Dr. Zahlbruckner, a *Leptinae,* and very closely allied, if not identical, with *U. articulata* (L.) Hoffm. These specimens are therefore probably to be referred to *U. gracilis* Ach.

[4] *U. rubescens* Strt.